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MODULAR RESIDENTIAL AMENITIES

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(57)

In its preferred embodiment the present invention provides a set of interconnectable building sections or construction units, which can be put together to quickly and easily construct a bathroom, kitchen area or other residential amenity in an existing non-residential space. The sections comprise complementary, substantially finished parts of a residential interior, including plumbing, wiring and fittings, and preferably are dimensioned so as to be able to be carried into a building through an ordinary door.

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Regulation 3.2

AUSTRALIA
Patents Act 1990

COMPLETE SPECIFICATION

FOR A STANDARD PATENT

ORIGINAL

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Invention Title: MODULAR RESIDENTIAL AMENITIES

The following statement is a full description of this invention, including the best method of performing it known to us:

Our Ref: #10725 BC:WB 05-20bro

FIELD OF THE INVENTION

The present invention relates to the general field of modular building systems, with particular application to modular plumbing and amenity systems.

OBJECT

It is an object of the present invention to go at least partway towards providing a novel or improved building system, or at least to provide the public with a useful choice.

STATEMENT OF INVENTION

Accordingly, in one aspect the present invention provides a modular system for constructing building interiors, including a plurality of construction units each comprising in combination one or more sections of interior architecture, one or more parts of a plumbing or electrical system and one or more amenities;
said construction units further comprising first connector means by which said units can be connected to provide mutual structural support, and second connector means by which said parts of a plumbing or electrical system can be operatively interconnected.

Preferably, each said construction unit is substantially prefinished.

Preferably, each said construction unit is dimensioned to be capable of passing through a doorway measuring 2 metres by 0.8 metres.

Preferably, a first said construction unit includes in combination: sections of interior architecture comprising one or more interior walls;
amenities including water heating apparatus;
parts of a plumbing system including a water inlet adapted and arranged for connection to an external water supply, water control and distribution means adapted and arranged for distribution of water to other said construction units, waste collection means for receiving waste from other said construction units, and a waste outlet adapted and arranged for connection to an external waste removal means;
and parts of an electrical system including a power inlet, and power control and distribution means adapted and arranged for distribution of power to other said

construction units.

These and other aspects of the present invention will be made apparent in the following description of preferred examples.

PREFERRED EMBODIMENT

The following is a description of preferred forms of the present invention, given by way of example only, with reference to the accompanying drawings, in which:

Figure 1: schematically illustrates various construction units of the preferred embodiment in perspective view;

Figure 2: illustrates building sections of Figure 1, interconnected as in use;

Figure 3: shows the interconnected sections of Figure 2 in plan view and partial section;

Figure 4: illustrates a core unit in rear view and section.

Figure 5: illustrates various arrangements of construction units of the present invention in the construction or modification of building interiors.

In its preferred embodiment the present invention provides a set of interconnectable building sections or construction units, which can be put together to quickly and easily construct a bathroom, kitchen area or other residential amenity in an existing non-residential space. The sections comprise complementary, substantially finished parts of a residential interior, including plumbing, wiring and fittings, and preferably are dimensioned so as to be able to be carried into a building through an ordinary door.

Preferably, the system can also allow interior architecture, associated wiring, plumbing and amenities to be removed relatively easily, and without significant damage to the building or to the amenities themselves. By this means, it is hoped to provide means by which building space can readily be converted for different uses as demand arises or changes.

As shown in Figure 1, the system of the present invention, in its preferred form, provides a number of room sections or components which can be fitted together in a variety of different ways to form rooms or areas of different shapes and sizes. A

bathroom 10 may be constructed from eight sections - a shower cabinet 11, a hand basin unit 12, a core unit 13, a floor section 14, a doorway 15, two wall sections 16 and 17, and a ceiling 60.

The floor section 14 is positioned first, simply being placed in the position desired for the bathroom 10 in the building. It is not necessary for the floor section 14 to be fastened down, and it can be set down on a bare floor, carpet or other surface as desired. If the underlying surface is uneven, an underlaying material might be put down first, to provide a smooth, flat foundation for the room.

The floor section may be formed of any waterproof material, but is preferably moulded, whether in plastics, concrete, a resin based composite, or other mouldable material. The upper surface of the section 14 is preferably provided with one or more drain holes 18, raised edges 19 around the shower cubicle, and sockets or recesses 20 in which the other sections of the bathroom 10 can be engaged. The floor section 14 may comprise a single piece, as shown, or might be made in two or more adjoining sections. In particular, the shower tray with raised edges 19 might comprise a separate section from the bathroom floor. This may have the disadvantage of potential for leakage between sections, but offers the possible advantages of using different colours or materials for different parts of the floor, and greater portability. Pipes 21 are also provided for interconnecting various elements of the bathroom, and wiring might also be built in for electrical supply, although this is not necessary in the illustrated example. Pipes and/or wiring extending through the floor section 14 are provided with coupling members 22 at the free ends, for connection with complementary members 23 associated with the core unit 13 and handbasin unit 12. Additional piping may also be provided for interconnection with a laundry and/or kitchen, if desired.

The shower cabinet 11 can be seated on the raised edges 19, and may be fixed in place with bolts or the like. The bottom of the shower cabinet 11 is preferably provided with a flange 24 which fits snugly over or inside the raised edges 19, and complementary holes might be provided for bolts to pass horizontally through both, to fix the cabinet in place. The shower cabinet 11 includes a door 25, taps 26 and a shower head 27. The taps 26 and shower head 27 are preferably interconnected within the cabinet 11, and provided with a hot water 28 and a cold water 29 inlet pipe, each having a coupling member 22 for connection with water supply pipes from the core unit 13. Alternatively

the taps 26 could be provided with T-connectors to fit into piping within the unit 13, which leads to a further connection with the shower head 27. As a further alternative, the shower cabinet 11 might be provided with a single cold water inlet pipe, leading through the taps 26 and water heating apparatus to the shower head 27, all built into the wall of the cabinet 11.

The cabinet 11 is prefinished and waterproofed on the interior surfaces, and may be provided with accoutrements such as soap trays or the like, as desired. By providing the cabinet as a finished, unitary article, it is not only made quick and easy to install, but also avoids or reduces on site sealing and waterproofing.

The door 25 and adjoining walls may be hinged or otherwise flexibly connected - possibly with a flexible, waterproof plastic strip or tape, so that the cabinet can be folded substantially flat. By this means, the dimensions of the cabinet can be reduced for transportation to the site, such that it can be carried through an ordinary door, to enter the building.

The handbasin unit 12 comprises a section of prefinished interior wall 30, a basin 31 mounted over cupboards 32, and preferably a light 34 and/or heater 35 mounted over the basin 31, with a mirror 36 and a power socket 37 is preferably provided on the wall 30. A short section of adjoining wall 38 may also be provided alongside the cupboards at right angles to the wall 30, but not projecting more than 80cm from the back of the unit 12, so that the unit 12 can be carried easily through a door.

Plumbing and electrical wiring is provided within the unit, with coupling members 23 at the loose ends for connection with coupling members 22 in the floor section 14. Preferably the unit 12 fits down into a socket in the floor section 14, or abuts against an edge of it, so that plumbing and electrical connections between the unit 12 and the floor 14 may be horizontal, but this is not essential. The plumbing in the unit 12 may be provided with one or more flexible sections, to make alignment and connection of the coupling members 22 and 23 more easy. Electrical connections for the light 34, heater 35 and/or power socket 37 preferably also go to the core unit 13, and may connect via the floor section 14, or with wiring passing along the top of the shower cabinet walls or over the ceiling. Alternatively, the hand basin unit 12 may be arranged to stand adjacent the core unit 13, with complementary connectors on the abutting sides.

The handbasin unit 12 can be fixed with bolts, screws, pivotal latches or the like through predrilled holes, to the shower cabinet 11, and/or the floor section 14.

The core unit 13 is best shown in Figure 4. As illustrated, it includes a cabinet 40, comprised of prefinished or substantially prefinished interior walls, a lavatory 41 fixed into the front face of the cabinet 40, a cistern 42, a hot water cylinder 43, a pump 44 and a fan 45 fitted inside the cabinet 40. Each of these elements may be standard, known apparatus, or might be shaped and designed specifically for this application. The pump 44 is used to expel waste from the bathroom 10, through a pipe 46, which may be connected to an existing sewerage system through a wall or floor, or more preferably as shown, through the ceiling of the building, where ducts can easily be installed without extensive modification to the building. The fan 45 can also be vented to the exterior of the building through a duct in the ceiling. Other accoutrements such as a recessed toilet roll holder 47, a light 48 and/or a fuse box 49 may be provided in the cabinet 40. Preferably, access to the interior of the cabinet 40 is through a removable panel at the rear of the cabinet, outside the bathroom 10.

As with the handbasin unit 12, the water supply unit 13 can be fastened to the shower cabinet 11 and the floor section 14, with screws, bolts, pivotal latches or the like. It may also be seated in a socket or recess in the floor section 14, or abutted agrinst it.

When these three units have been fitted onto the floor section 14, fastened in place and interconnected, the bathroom 10 can be completed by fitting the wall panels 16 and 17, and the doorway 15 which, like the walls of the shower cabinet 11, may be fastened together with hinges or flexible connectors prior to installation. Electrical fittings such as light switches or a heated towel rail may be included on the wall panels if desired. All electrical connections between sections of the bathroom are preferably accomplished with standard pin-and-socket connectors, either seated in recesses in the floor, in the ceiling, or in the sections themselves. The bathroom 10 as a whole can preferably be made operational with a single power supply connection, a single water supply connection and a single waste removal connection, all incorporated into the core unit 13.

To completely enclose the bathroom 10, a false ceiling 60 may be provided, as a cap over the whole room, or an architrave of appropriate dimensions may be fastened onto

the tops of the walls, abutting against the original ceiling of the building. The ceiling 60 is preferred, because it serves to tie the various components together, providing a more solid overall construction.

Other units as illustrated in Figure 1, may be attached to the central core provided by the bathroom 10, such as a laundry 50, a kitchen unit 51, and/or partitions and dividing walls. By this means, a large space in a building can be subdivided into a variety of separate residential areas or rooms, as shown in Figure 5.

It will be appreciated that the sections described above can readily be unbolted, unplugged and disconnected, to be removed through the same doorway.

The sections can then be reassembled elsewhere, or in a different combination or configuration, to suit changes in the requirements of the occupants.

It should also be appreciated that while the various components described and illustrated are preferred at present, a wide variety of standard amenities and fixtures might be incorporated into construction units of the present invention. Baths or shower/baths might be used instead of a shower cabinet; a hot air hand or hair dryer might be incorporated in the hand basin unit; proximity sensors and other automatic control means might be provided to control lights, heaters or air vents. It should be noted that while the present invention is primarily intended for converting office or industrial space to residential space, units can be provided for the reverse operation, comprising interior architecture such as partition walls with integral wiring, plumbing, telephone connections, and office amenities such as shelving, filing space, a safe, desks or computer workstations, air conditioning or venting, heating and lighting. By this means a residential house, warehouse or other space can readily be subdivided and converted for office use.

A wide range of changes and modifications might be made to the above example, within the general spirit and scope of the invention, which may be characterised as follows:

The claims form part of the disclosure of this specification.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS :

1. A modular system for constructing building interiors, including a plurality of construction units each comprising in combination one or more sections of interior architecture, one or more parts of a plumbing or electrical system and one or more amenities;
said construction units further comprising first connector means by which said units can be connected to provide mutual structural support, and second connector means by which said parts of a plumbing or electrical system can be operatively interconnected.

2. A modular system as claimed in claim 1, wherein each said construction unit is substantially prefinished.

3. A modular system as claimed in claim 1 or claim 2, wherein each said construction unit is dimensioned to be capable of passing through a doorway measuring 2 metres by 0.8 metres.

4. A modular system as claimed in any of the claims 1 to 3 wherein a first said construction unit includes in combination sections of interior architecture comprising in combination one or more interior walls;
amenities including water heating apparatus;
parts of a plumbing system including a water inlet adapted and arranged for connection to an external water supply, water control and distribution means adapted and arranged for distribution of water to other said construction units, waste collection means for receiving waste from other said construction units, and a waste outlet adapted and arranged for connection to an external waste removal means.

5. A modular system as claimed in claim 4, wherein said first construction unit further includes parts of an electrical system including a power inlet, and power control and distribution means adapted and arranged for distribution of power to other said construction units.

6. A modular system as claimed in claim 4 or claim 5, wherein said first construction unit includes part of a bathroom, and said amenities of said first construction unit include a lavatory operatively connected to said parts of a plumbing system.

7. A modular system as claimed in any one of claims 4 to 6 wherein said first construction unit further includes a pump operatively connected with said waste collection means, and adapted to be powered from parts of an electrical system.

8. A modular system as claimed in any one of claims 4 to 7, wherein said first construction unit further includes an air duct, and an air pump adapted to be powered from parts of an electrical system.

9. A modular system as claimed in any one of claims 1 to 8 wherein said sections of interior architecture each comprise interior walls, said system further including one or more floor sections each including connector means adapted and arranged for connection with a plurality of said construction units, to interconnect said construction units in use.

10. A modular system as claimed in claim 9, further including one or more ceiling sections, each including connector means adapted and arranged for connection with a plurality of said construction units, to interconnect said construction units in use.

11. A modular system substantially as herein described with reference to any one of the accompanying drawings.

12. A method for constructing a building interior, including the steps of:
preassembling parts of said interior as combinations of interior architecture, amenities and parts of fluid or power supply systems, each said part being substantially finished and dimensioned to fit through a doorway; transporting said parts to a building interior; and operatively and structurally interconnecting said parts.

13. The steps, features or integers disclosed in the accompanying specification or drawings, individually or in any combination.

DATED this June 1, 1992

CARTER SMITH & BEADLE

Fellows Institute of Patent Attorneys of Australia

Patent Attorneys for the Applicant:

BROWN, Malcolm Donald and DAY, Murray Frank

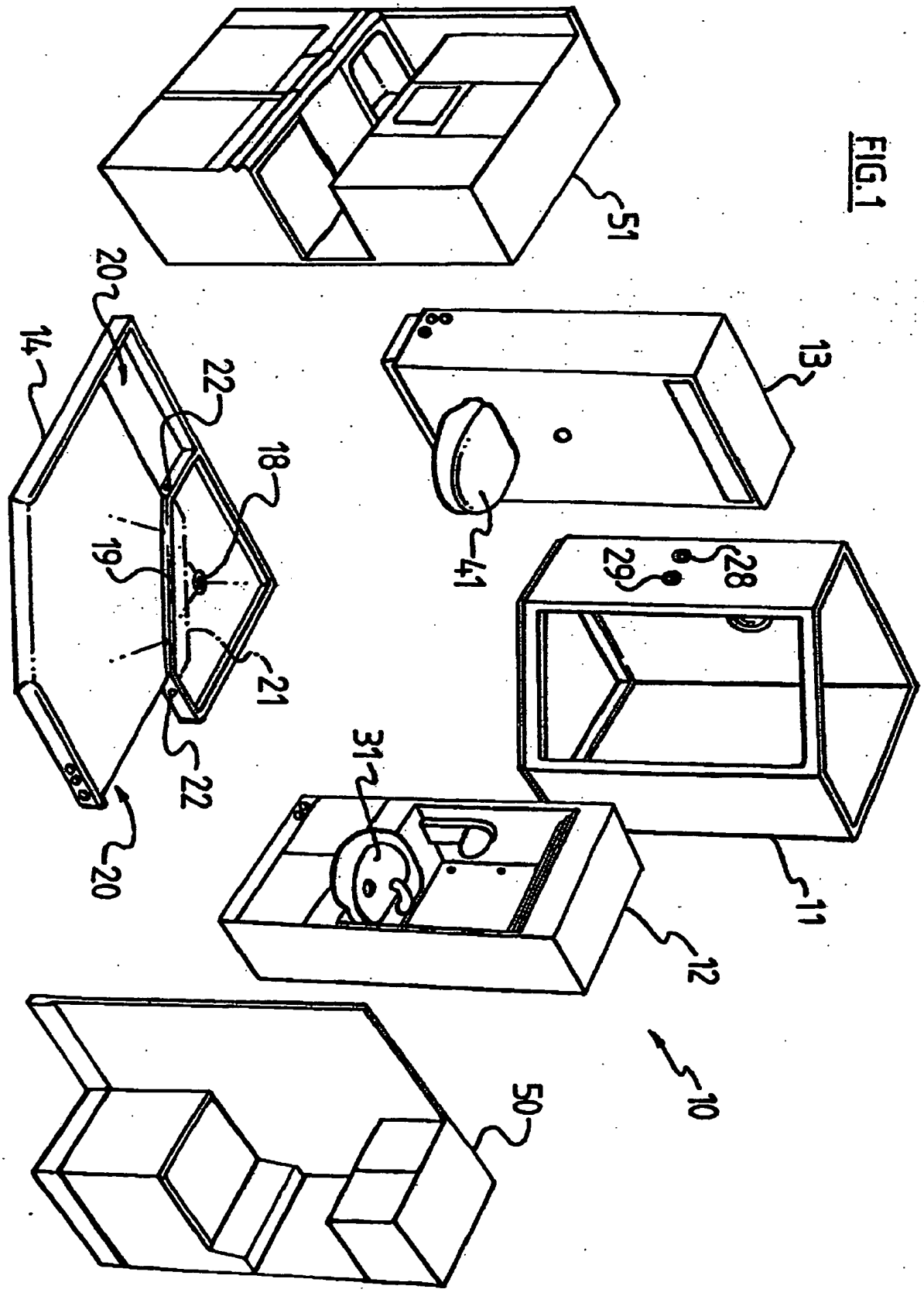
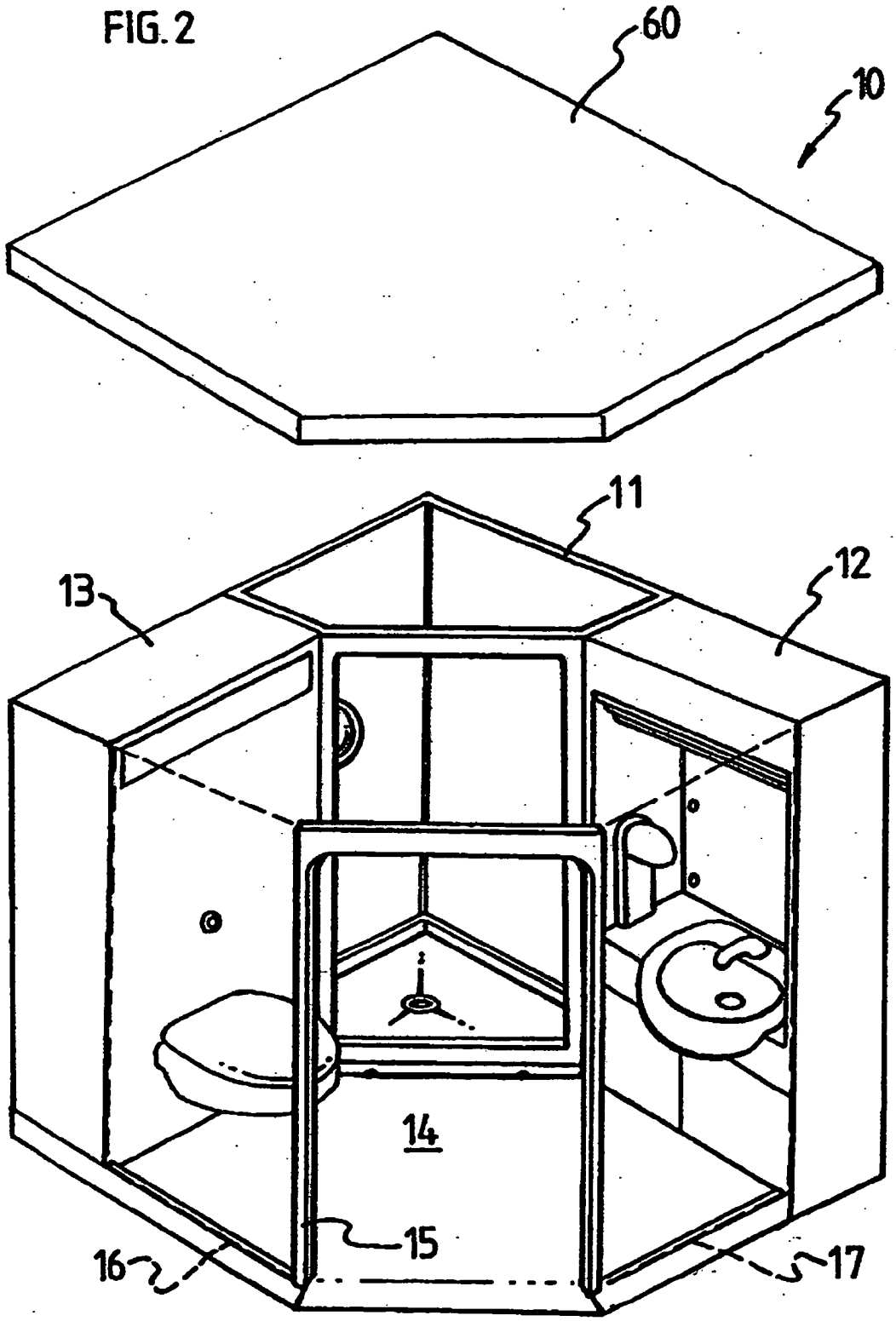


FIG.1

FIG. 2



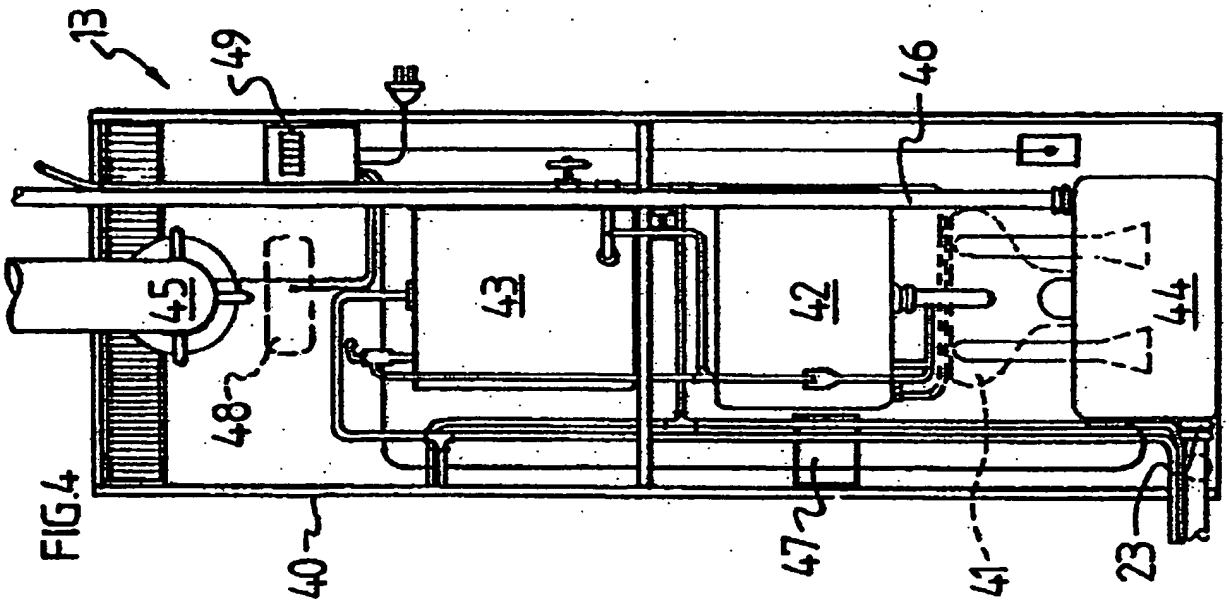

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FIG.4

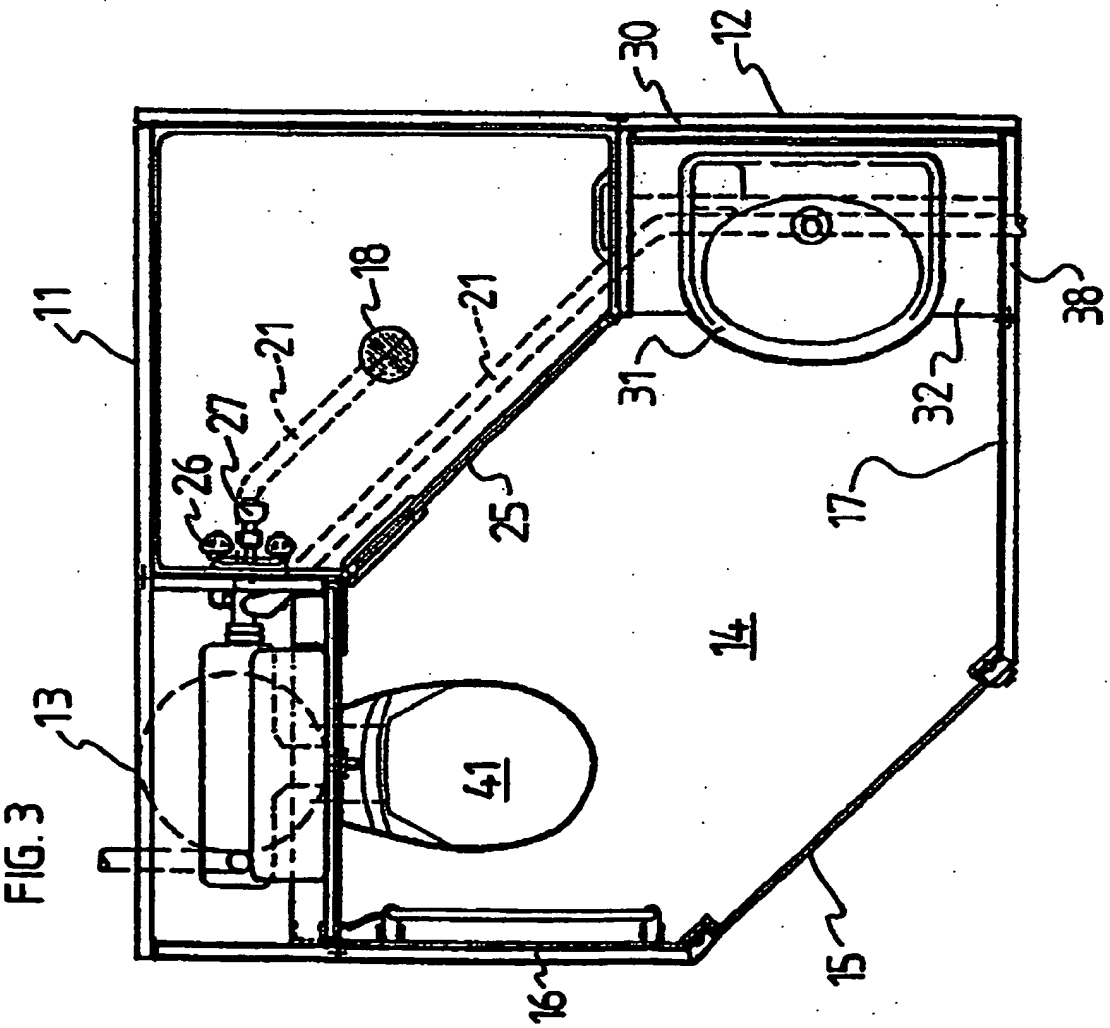
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FIG.3

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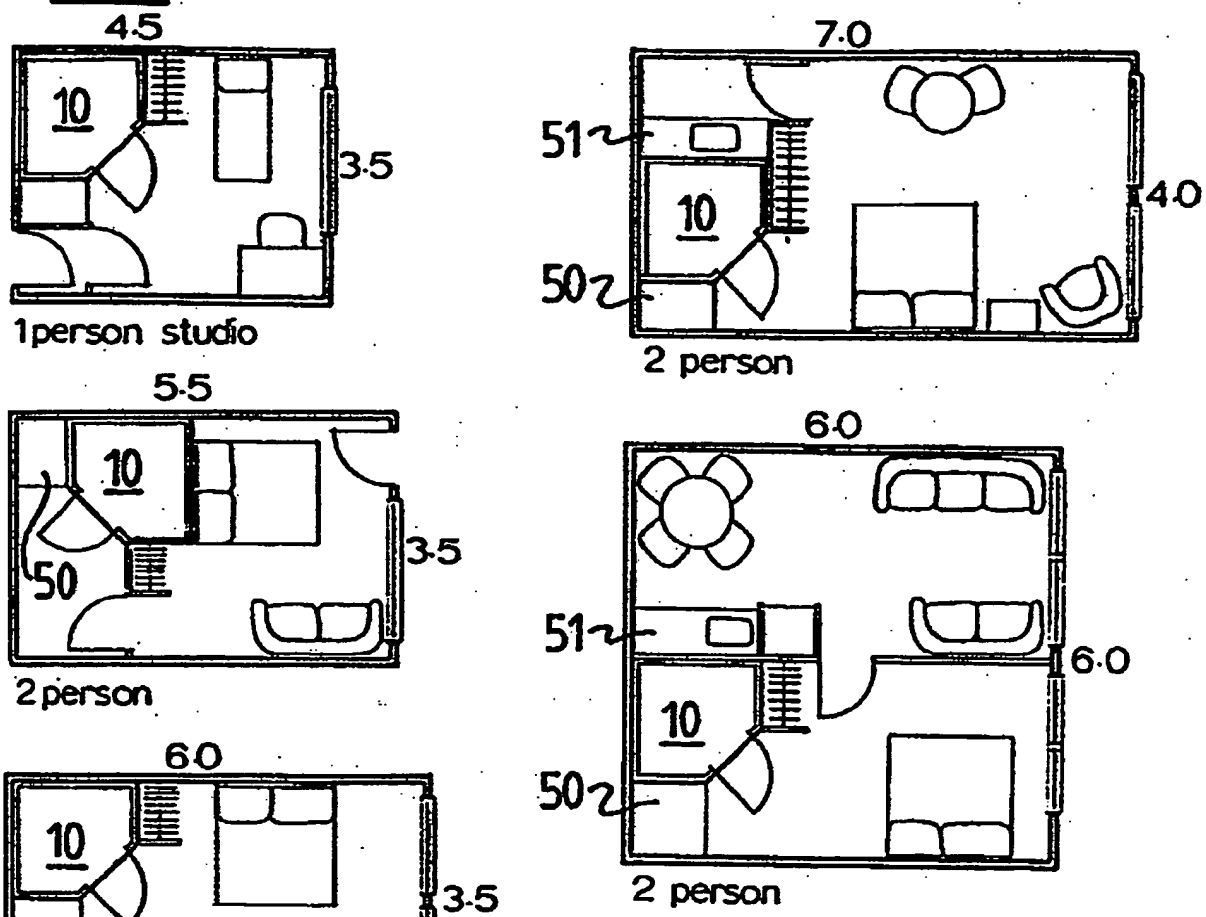
FIG. 5



P/00/001
Section 29

AUSTRALIA
Patents Act 1990
PATENT REQUEST : STANDARD PATENT

We, being the person(s) identified below as the Applicant, request the grant of a patent to the person identified below as the Nominated Person, for an invention described in the accompanying standard complete specification.

Applicant:	BROWN, Malcolm Donald and DAY, Murray Frank
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Nominated Person:	As above
Address:	As above
Invention Title:	MODULAR RESIDENTIAL AMENITIES
Name of Actual Inventor/s:	Malcolm Donald BROWN and Murray Frank DAY
Address for service in Australia:	CARTER SMITH & BEADLE Qantas House 2 Railway Parade Camberwell Victoria 3124 Attorney Code CD

BASIC CONVENTION APPLICATION DETAILS

Applicants' Name:	Malcolm Donald BROWN and Murray Frank DAY
Application Number:	238373
Country:	New Zealand
Code:	NZ
Date of Application:	31st May, 1991

Dated this 1st day of June, 1992.

Brett Common

CARTER SMITH & BEADLE
Patent Attorneys for the Applicants

Our Ref: #10725 BC:WB 05-20bro

for patent applications

P/00/008
Section 29(1)
Regulation 3.1(2)

AUSTRALIA
Patents Act 1990

NOTICE OF ENTITLEMENT

I/We, Malcolm Donald BROWN, and Murray Frank DAY both of 124 Grafton Road, Grafton, Auckland, New Zealand, being the applicant in respect of Application No. , state the following:-

The person(s) nominated for the grant of the patent:

is/are the actual inventor(s)

The person(s) nominated for the grant of the patent:

is/are the applicant(s) of the basic application(s) listed on the patent request form

The basic application(s) listed on the request form:

is/are the first application(s) made in a Convention country in respect of the invention

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by Brett Connor
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